

REMARKS

Status of the Claims

Upon entry of the amendment above, claims 1-16 and 18-75 will be pending, claims 1, 15, 46, 50, and 64 being independent.

Summary of the Office Action

Claims 1-7, 9-16, 18-41, and 44-63 are rejected under 35 USC §103(a) as being unpatentable over WOJCIK (U.S. Patent No. 5,807,152) in view of PRADE et al. (U.S. patent No. 4,556,003, hereafter "PRADE").

Claims 64-67 are rejected under 35 USC §103(a) as being unpatentable over PACCORET et al. (U.S. Patent No. 4,964,825, hereafter "PACCORET").

Claims 8, 42, and 43 are rejected under 35 USC §103(a) as being unpatentable over WOJCIK in view of PRADE and EP 0 575 130 (hereafter "EP '130").

Response to the Office Action

A. Withdrawal of Rejections Based Upon WOJCIK and PRADE

Applicants kindly request reconsideration and withdrawal of the two grounds of rejection which rely – primarily or in full – upon the combination of WOJCIK and PRADE. In fact, for the purpose of the instant reply, Applicants will not separately argue the ground that relies upon EP '130 (applicable to dependent claims 8, 42, 43), but requests withdrawal of the rejection for the reasons given with regard to the rejection of the claims from which rejected claims 8, 42, and 43 depend.

Of the previously pending claims (i.e., claims 1-16, 18-67), all but claims 8, 42, 43, 64-67 stand rejected for obviousness over the combination of WOJCIK and PRADE. This includes the rejection of independent claims 1, 15, 46, and 50. Of these four independent claims, independent claims 1 and 46 do not specify a partition (i.e., stringer) comprising an elastic foam, whereas independent claims 15 and 50 specify one or more partitions comprising an elastic and compressible foam, respectively.

Applicants' following comments, which are fully responsive to the rejections, will address the two groups of claims separately (i.e., claims that include a limitation relating to compressibility/elasticity and claims that do not include such a limitation).

1. Claims 1, 2, 5-8, 14, 29, 31, 32, 42, 44, 53, 55-57, 59, 60, 46-49, and 62

Of the claims rejected over WOJCIK in view of PRADE, claims 1, 2, 5-8, 14, 29, 31, 32, 42, 44, 53, 55-57, 59, 60, 46-49, and 62 – of which claims 1 and 46 are independent – are directed to a surfboard having a deck (or upper half-shell) comprising a foam material (or sheet of foam); a hull (or lower half-shell); and at least one longitudinal partition extending between the deck and hull (or between the upper and lower half-shells), the partition(s) consisting essentially of foam. Independent claim 46 further specifies that the foam material of the partition allows the “deck to deflect downwardly relative to said hull under pressure exerted by a foot of the user on said deck.”

Applicants respectfully submit that one skilled in the art would not have considered WOJCIK, modified by PRADE, to have rendered Applicants' claimed invention obvious. In short, the disclosures of WOJCIK and PRADE are so different that one skilled in the art would not have looked to the teachings of PRADE for the purpose of modifying the surfboard of WOJCIK as suggested in the Office action.

In this regard, the bottom half of page 2 of the Office action includes an acknowledgement that “Wojcik does not disclose that the upper shell sheet is foam or that the said longitudinal partition consisting essentially of foam.” However, the Office action continues, that it would have been obvious to make the upper and lower shells of WOJCIK of foam and to make the partition of foam, as well, as allegedly suggested by PRADE.

Because the Office action refers to reference numerals 84, 100, 100a, and 102 of WOJCIK, it appears that the rejection relies upon the embodiment of Figs. 15-17 of WOJCIK, for which the specific description begins in column 6, line 49 (general aspects of all of the embodiments are described in earlier portions of the specification, as well).

WOJCIK discloses a surfboard having an unconventional construction. The background section of the specification explains that conventional surfboards are typically made in the form of either of two types. The first is made from polyurethane or polystyrene foam covered with a hard shell after the foam core is machined, as mentioned in column 1, lines 15-23. (This is consistent with Applicants' description of the prior art). The second type (mentioned in column 1, lines 24-31) is said to have a so-called hollow hull. WOJCIK explains (see column 1, lines 51-61) that these two types of boards are difficult and expensive to manufacture and difficult and costly to repair.

To overcome these drawbacks, WOJCIK proposes a surfboard that can be made "using simple ... forming techniques" (column 2, lines 10-12), such techniques being "thermo-forming techniques." Whether the embodiment of Figs. 15-17 is considered or the embodiment shown, e.g., in Fig. 3, the surfboard of WOJCIK includes a "structural core" (element 12 of Fig. 3 or element 72 of Fig. 17) that is made by thermo-vacuum forming. See, e.g., column 5, line 36, to column 6, line 48. The longitudinal partition 84, mentioned in the rejection, is merely a part of the structural core 72; the structural core extends essentially completely along the length and width of the board (in contrast to one or more partitions in the embodiments of Applicants' invention).

In the rejection, WOJCIK is acknowledged as failing to disclose an upper shell made of a foam sheet or a partition made of foam. Therefore, the rejection relies upon PRADE, offering the conclusion that it would have been obvious to make the upper and

lower shells of WOJCIK from foam and to make the partition 84 of WOJCIK from foam. Motivation for that modification of WOJCIK is said to be found in column 2, lines 43-45 of PRADE (i.e., "The selection of the material in each case will be dependent on the properties (flexibility and strength) desired of the end product.").

Applicants submit there are problems with this rejection. First, with reference to WOJCIK's Fig. 20, which is a cross-sectional view of the surfboard, partition 84 is shown to be U-shaped (obviously resulting from the aforementioned vacuum-forming process) having side walls 84a, 84b. The rejection is not particularly precise regarding whether, if a foam were to be used in making the partition of WOJCIK, (1) the entire length and width of the partition 84 – i.e., from side wall 84a to side wall 84b – is to be made of a foam (as allegedly suggested by PRADE), or (2) the thin material of the core 72 used in the vacuum-forming process is a foam rather than ABS.

In either case, Applicants submit, such modification would be quite contrary to the above-mentioned objectives of WOJCIK, i.e., to use "simple thermo-forming techniques" (column 2, lines 10-15). One skilled in the art of vacuum thermoforming would readily recognize that the U-shape of the partition 84 of WOJCIK would result from a vacuum being created in the female-portion of the mold, which would pull and stretch the plastic sheet into the concave details of the mold surface. The modification proposed in the rejection, i.e., to make the partition of a foam would appear to require thermo-forming in addition to some step that would attach foam partitions to WOJCIK's core 72, if thermo-forming can be retained at all in the modification proposed in the rejection. That is, as explained by WOJCIK (see, e.g., column 2, lines 18-21), an object of the invention is to manufacture a surfboard inexpensively from plastic sheets using thermo-vacuum forming techniques ***instead of using techniques to create foam core surfboards*** (see, e.g., column 1, lines 51-57).

As explained in MPEP §2143.01, if proposed modification would have rendered the prior art invention being modified unsatisfactory for its intended purpose, then there would have been no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Further, in new claims 68 and 72, which depend from independent claims 1 and 46, respectively, Applicants call for the plurality of independent longitudinal partitions, whereby the foam of each of the partitions is not continuous with the foam of any other of said partitions. Again, the partitions 84 of WOJCIK are part of one continuous core; they are not independent. As mentioned above, WOJCIK intends to offer a simplified technique that is not as labor-intensive as the prior art and, therefore, relies upon thermoforming for that purpose.

2. Claims 3, 4, 9-13, 15, 16, 18-28, 30, 33-41, 43, 44, 45, 49-52, 54, 58, 61, and 63

Of the claims rejected over WOJCIK in view of PRADE, claims 3, 4, 9-13, 15, 16, 18-28, 30, 33-41, 43-45, 49-52, 54, 58, 61, and 63 call for the partition(s) to comprise an elastic and/or compressible foam or, with regard to claims 9-13, e.g. (which depend from claim 1), and others (which depend from other independent claims), they call for a particular such foam (such as expanded polypropylene particle foam), whereas the foam(s) of the deck and/or hull are made from other – more rigid – foams.

With regard to these claims, Applicants respectfully submit that one skilled in the art would not have considered WOJCIK, modified by PRADE, to have rendered Applicants' claimed invention obvious for reasons already advanced as well as additional reasons.

In these claims, the aforementioned limitation refers to the partition(s) being made of an elastic or compressible foam so that the deck of the surfboard can deflect relative to the hull (i.e., the upper half-shell relative to the lower half-shell).

Near the bottom of page 3, the Office action includes an acknowledgement that WOJCIK fails to disclose a partition comprising a polymeric elastic foam to provide the deck with the ability to deflect downwardly under pressure of the foot of a user.

On page 4, lines 6-10, however, the Office action advances the conclusion that it would have been obvious to modify the board of WOJCIK so that the hull and the partition are made of an elastic foam, as allegedly suggested by PRADE.

Applicants respectfully submit that the rejection can only be based upon an improper after-the-fact reconstruction of Applicants' invention. First of all, the same problem is presented in modifying WOJCIK with PRADE as mentioned above, in that WOJCIK requires thermo vacuum-forming, which would be incompatible with the user of an elastic foam and, with reference to WOJCIK's objectives, contrary to manufacturing a surfboard less expensively.

Second, even as mentioned in the Office action (page 4, lines 3-5), the elastic foam of PRADE is used only on the top part 3. The bottom 2 ("base element") of PRADE's board (which includes partition-like structures 7 and 9) is made of a relatively rigid material; not an elastic foam. In column 3, lines 47-54, PRADE explains that the bottom 2 is produced from a mechanically strong material. In column 1, lines 66-69, PRADE mentions that the lower part is made of a mechanically strong material "having a specific gravity higher than that of synthetic resin foam."

Although PRADE mentions (in column 47-54) the possible use of a polyethylene-*foam*-sandwich or a polyurethane integral *foam*, Applicants submit that such constructions would not be fairly characterized as relating to *elastic* foams.

Based upon the foregoing, then, considering both WOJCIK and PRADE, ***there is no disclosure of an elastic foam for a partition.*** Rather, PRADE merely discloses "a

generally flexible, soft foam material for the top part 3," (column 5, lines 25-27) so that "the danger of injury is reduced." Clearly, the surfer would not become injured with the partitions 7, 9, or other parts of the lower part 2.

Accordingly, reconsideration and withdrawal of the rejection are kindly requested.

Further, in new dependent claims 69-71 and 73-75, Applicants call for foam of the partition(s) to be different from the foam of the deck (or upper half-shell). Certain of these claims further specify that the foam of the partition(s) is less rigid. No teaching or suggestion of these limitations is believed to be found in WOJCIK or PRADE.

In fact, foam of the partition(s) being less rigid than the foam of the deck/upper half-shell is contrary to PRADE, in which the top part 3 is more flexible and soft than the partitions 7, 9 of the bottom part 2.

Lastly, regarding the aforementioned group of claims, dependent claims 9-13 are specific with regard to the types of polymer foam utilized, which is not found in the prior art relied upon. Claim 9 provides that the at least one partition is made of polypropylene foam. Claims 10-13, which depend directly or indirectly from claim 9, specify certain physical characteristics of the polypropylene foam that provides for the advantages discussed in Applicants' specification, which permit the invention to achieve certain objects of the invention.

Beginning with paragraph 0063 of the specification of the instant application, Applicants have disclosed the benefits of using an elastic partition (which includes a visco-elastic partition), such as a foam, with paragraph 0068 explaining the characteristics of an expanded polypropylene foam (EPP foam), which heretofore has not been used in a surfboard, to provide the benefit of providing sufficient support for the deck of the surfboard, while providing deflection to add liveliness to the board.

Attached to Applicants' reply to the prior Office action is a copy of an article from the January 31, 2006 edition of the *Honolulu Star-Bulletin*, entitled "Changing surfboard market energizes Kapolei firm," which explains that one California supplier (Clark Foam) had supplied 80% of the world's market for surfboard foam blanks until it shut down in December 2005. Those blanks were made of polyurethane (PU). Of course, such blanks are solid foam blanks, rather than hollow blanks with internal partitions. The article quotes one surfboard shaper as stating that "95 percent of surfers are still using polyurethane" blanks. The article further explains that a small company (Pacific Allied Products) has begun to offer surfboard blanks made of expanded polystyrene (EPS) foam.

The use of PU for surfboard blanks is consistent with Applicants' description of the prior art (see, e.g., paragraph 0018 of the specification of the instant application). See also the article from *surfermag.com* (also attached to Applicants' prior reply), entitled "Clark Foam Apocalypse: Some Board Builders See Light Ahead While Clamoring to Fill Clark Foam Void," which also describes the use of PU and polystyrene foam blanks.

Further, Applicants explain that their deck and hull (i.e., upper and lower half-shell) can be made of various types of foam, including PU and PVC foams. See, e.g., paragraph 0026 of their specification.

However, the references relied upon in the rejection do not teach or suggest the use of an elastic foam in a surfboard, more particularly a partition made to include an expanded polypropylene foam (EPP), which enable Applicants to achieve certain objects of the invention, and as specified in their claims 9-13. It is Applicants' contribution to the technology to disclose a hollow surfboard having a partition made of a foam different from the foam of the deck or hull, more particularly an elastic foam and, more particularly, one in which the elastic foam is EPP foam.

B. Withdrawal of Rejection of Claims 64-67 Based Upon PACCORET

Independent claim 64 and dependent claims 65-67 are rejected under 35 USC §103(a) as being unpatentable over PACCORET et al. (U.S. Patent No. 4,964,825). See Section 3, beginning on page 9 of the Office action.

Independent claim 64 includes every limitation that appears in claim 23 of the patent that issued from the parent application (i.e., US 6,736,689). In addition, claim 64 calls for the partition, within the hollow inner shell to be made of a material ***different from*** the thermoformed extruded polystyrene foam of the casing.

In the parent application, the only independent claim in the final Office action prior to allowance was a rejection of application claim 41 (i.e., corresponding to patent claim 23), based primarily upon PACCORET. Following Applicants' arguments advanced in their reply filed on November 26, 2003, the rejection was withdrawn.

The rejection to which Applicants here respond includes the statement that the partition 14 of PACCORET (see Figs. 5, 9, and 10) is made of a material that is different from the material of the casing (elements 24, 24'). Applicants have found no mention in PACCORET's description that the partition 14 is made of a material different from that of the casings 24, 24'.

In fact, and contrary to that statement, Applicants submit that column 5, lines 45-48, of PACCORET explains that the partition (web) 14 is "formed with a sandwich construction similar to that of the upper and lower board sections," which Applicants submit refers to the constructions that include the casings 24, 24'. Accordingly, it would appear that the rejection is in error in this regard or, at a minimum, relies upon speculation not suggested or taught by PACCORET.

Independent claim 64 calls for the casing of Applicants' aquatic gliding board (i.e., the casing between a hollow inner shell and an outer shell) to comprise a *thermoformed* layer of *extruded* polystyrene foam.

PACCORET discloses an aquatic gliding board, *i.e.*, a gliding board, such as a sail board or surfboard. A sandwich structure is prepared, with inner and outer layers in place, from which the board is then assembled. The Examiner explains in his rejection that, in Fig. 1, PACCORET illustrates an inner shell formed by inner skins 22, 22'; an outer shell formed by skins 20, 20'; and a core/casing 24' between the inner and outer shells.

In column 4, lines 57-65, PACCORET describes the preferred embodiment in which a polyvinyl foam is used. Incidentally, PACCORET describes that polyvinyl foam is used *only for the bottom section* of the board. In fact, PACCORET is quite specific in his reason for this asymmetrical use of materials. That is, in lines 63-65, PACCORET explains that "[t]his [Diab Barracuda type HT-70 polyvinyl foam] is a closed cell foam that has a very low rate of water absorption in case the board is punctured."

By contrast, Applicants have already explained (see paragraph 0009) that polystyrene foams have the disadvantage of "taking on water" in the event that the outer shell of the board were to be damaged, *i.e.*, the risk of water penetration, whereby the board could be weighed down and the water would be difficult to evacuate from the foam.

Therefore, Applicants submit that one skilled in the art, when considering the invention as a whole, including the specific comment made by PACCORET that polyvinyl foam is to be used because it has a very low rate of water absorption in case the board were to be punctured, would not likely be led to substitute a foam that would be more water absorbent.

At least for the foregoing reasons, Applicants request that the rejection of claims 64-67 on the basis of PACCORET be reconsidered and withdrawn.


SUMMARY AND CONCLUSION

The grounds of rejection advanced in the Office action have been addressed and are believed to be overcome. Reconsideration and allowance are respectfully requested in view of the amendment and remarks above.

Payment accompanies this reply of a fee for a one-month extension of time. No additional fee is believed to be due at this time. However, the Commissioner is authorized to charge any fee required for acceptance of this reply as timely and/or complete to Deposit Account No. 19-0089.

Further, although an extension of time for one month is believed to be necessary at this time, if it were to be found that an extension of time were necessary to render this reply timely and/or complete, Applicants request an extension of time under 37 CFR §1.136(a) in the necessary increment(s) of month(s) to render this reply timely and/or complete and the Commissioner is authorized to charge any necessary extension of time fee under 37 CFR §1.17 to Deposit Account No. 19-0089.

Respectfully submitted,
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August 7, 2006
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